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Report on 1987 Statewide Computer Survey

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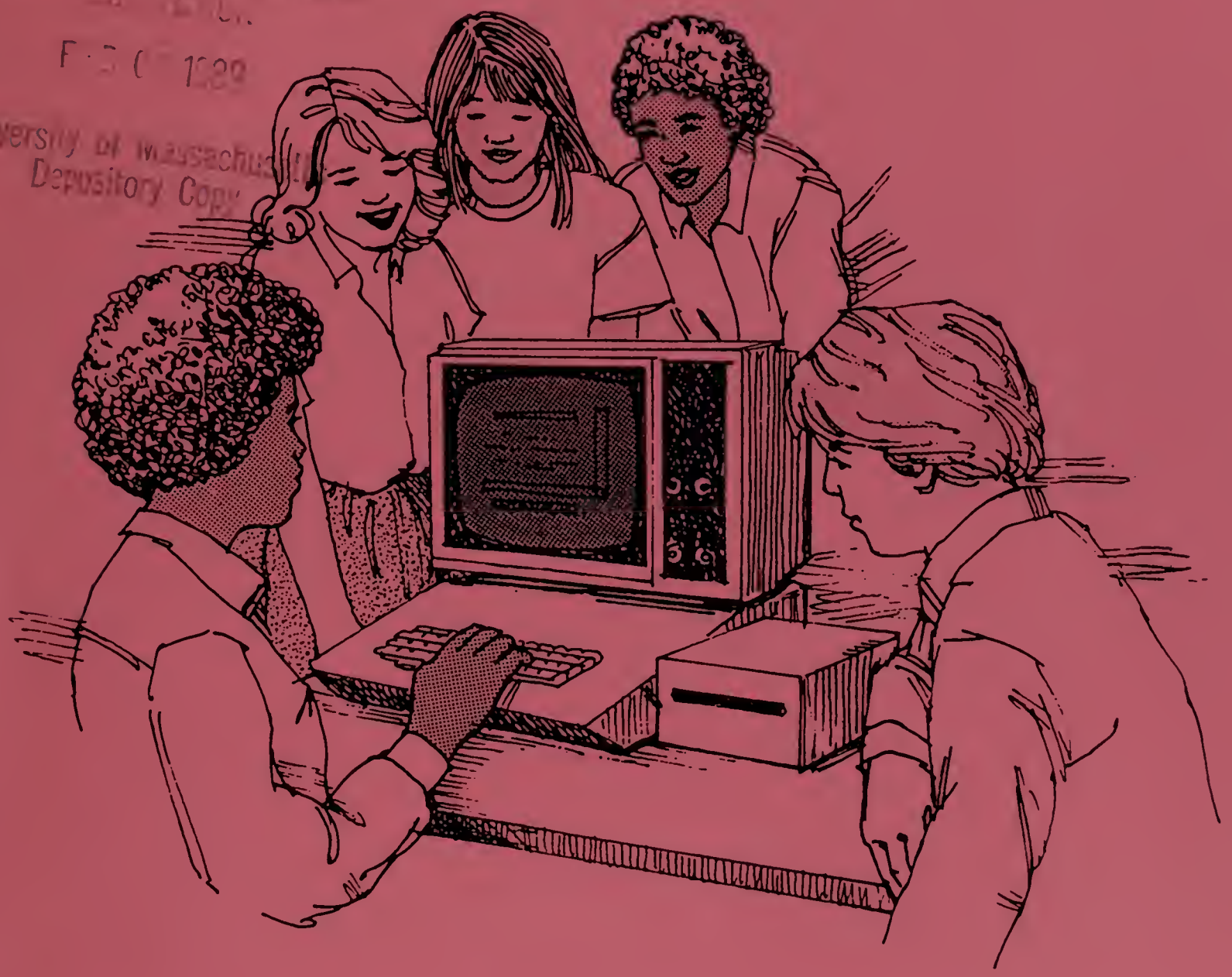

Massachusetts Department of Education
Bureau of Educational Technologies

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REPORT ON THE STATEWIDE USE OF COMPUTERS IN SCHOOLS IN 1987

Introduction

Between 1981 and 1985, the Bureau of Educational Technologies, Massachusetts Department of Education conducted annual surveys on the use of computers in Massachusetts schools. The summary reports from these surveys have provided educational decision makers, teachers and the general public with a snapshot view of which brands computers were being used and how these computers were being used. They also provided facts about funding sources for computer instruction and school districts' needs for further instructional development with computers.

This year, our summary report on the use of computers in schools is based on the data collected by the Department for the Chapter 188 district survey. The Chapter 188 School Improvement Act of 1985 requires the Massachusetts Department of Education to collect school and district data annually. In the spring of 1987, 337 school districts responded to the questions regarding computer applications for instruction (Appendix A).

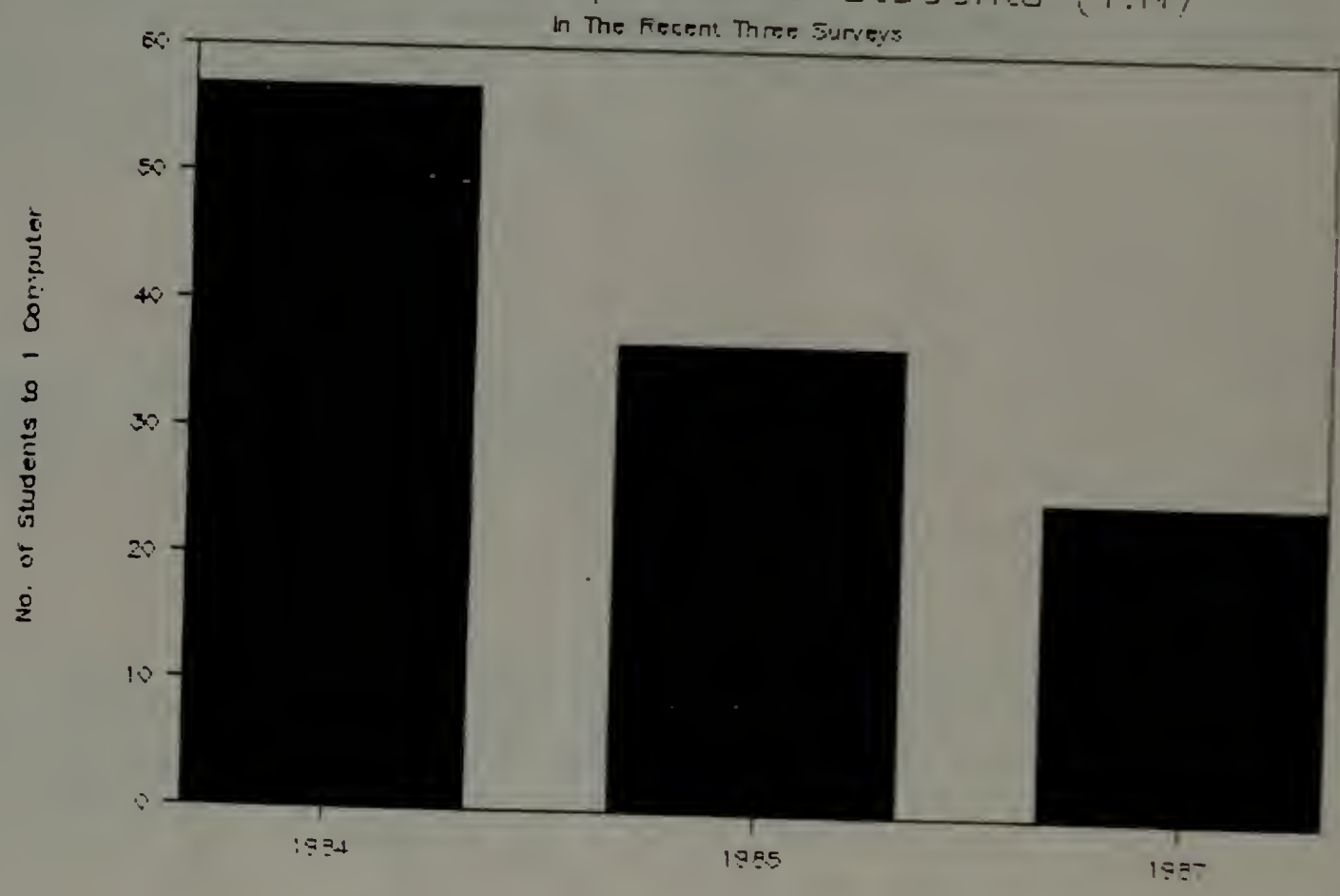
SURVEY FINDINGS

I. Number of Computers

Based on the survey, the approximate number of 'keyboards' (microcomputers or terminals) available to students in reporting school districts was 35,564, giving a ratio of 1 keyboard to 23 students. The approximate number of microcomputers is 31,660, yielding a ratio of 1 microcomputer to 25 students.

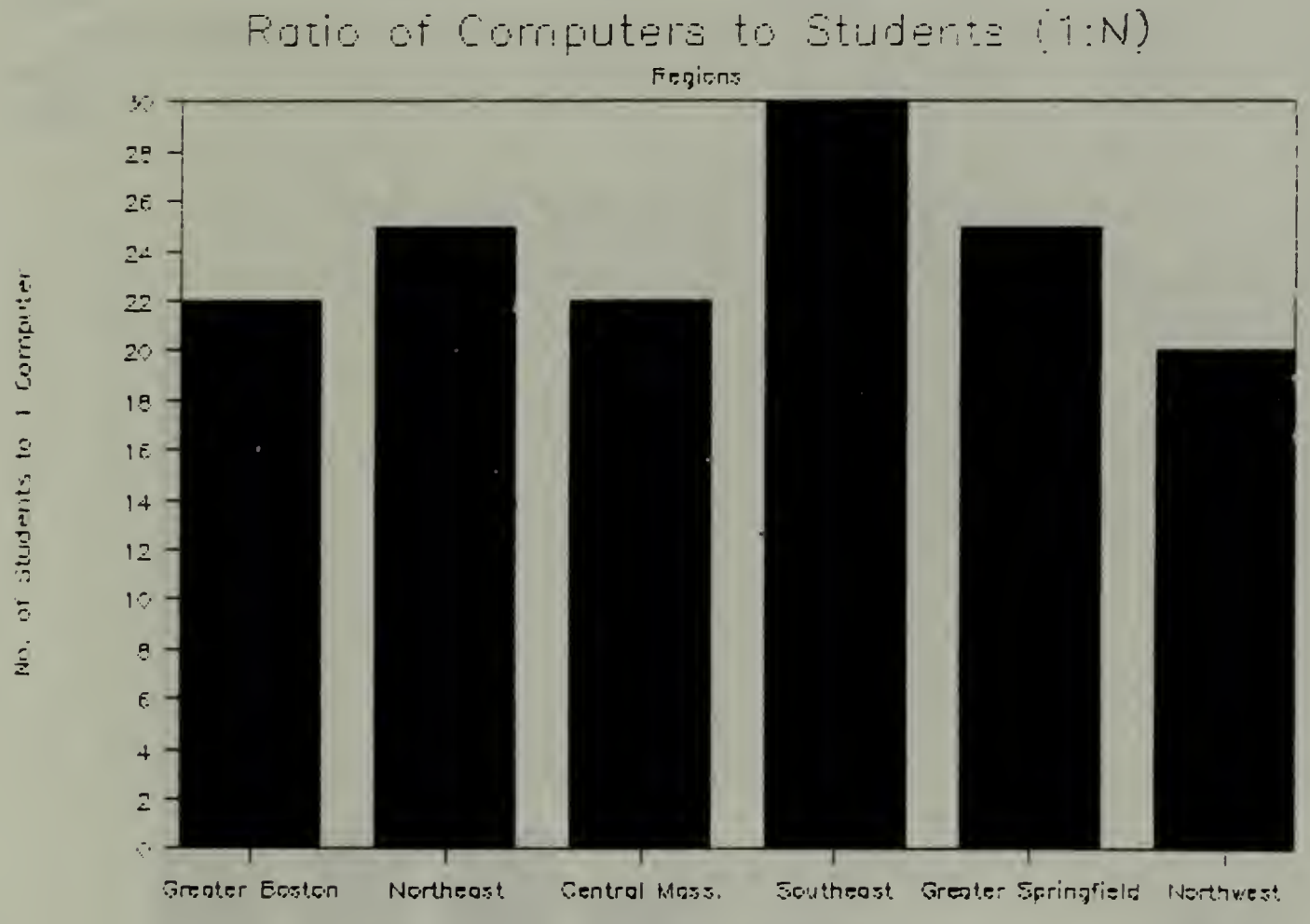
A. The survey indicated that there has been a significant increase in the use of computers in Massachusetts schools. The following table shows the ratio of microcomputers to students in the three recent surveys conducted by the Department.

Year	# of Microcomputers	# of Districts Surveyed	Appro.# of Students	Ratio of Computers to Students
1984	12,207	255	700,000	1:57
1985	21,075	272	780,000	1:37
1987	31,660	337	800,000	1:25



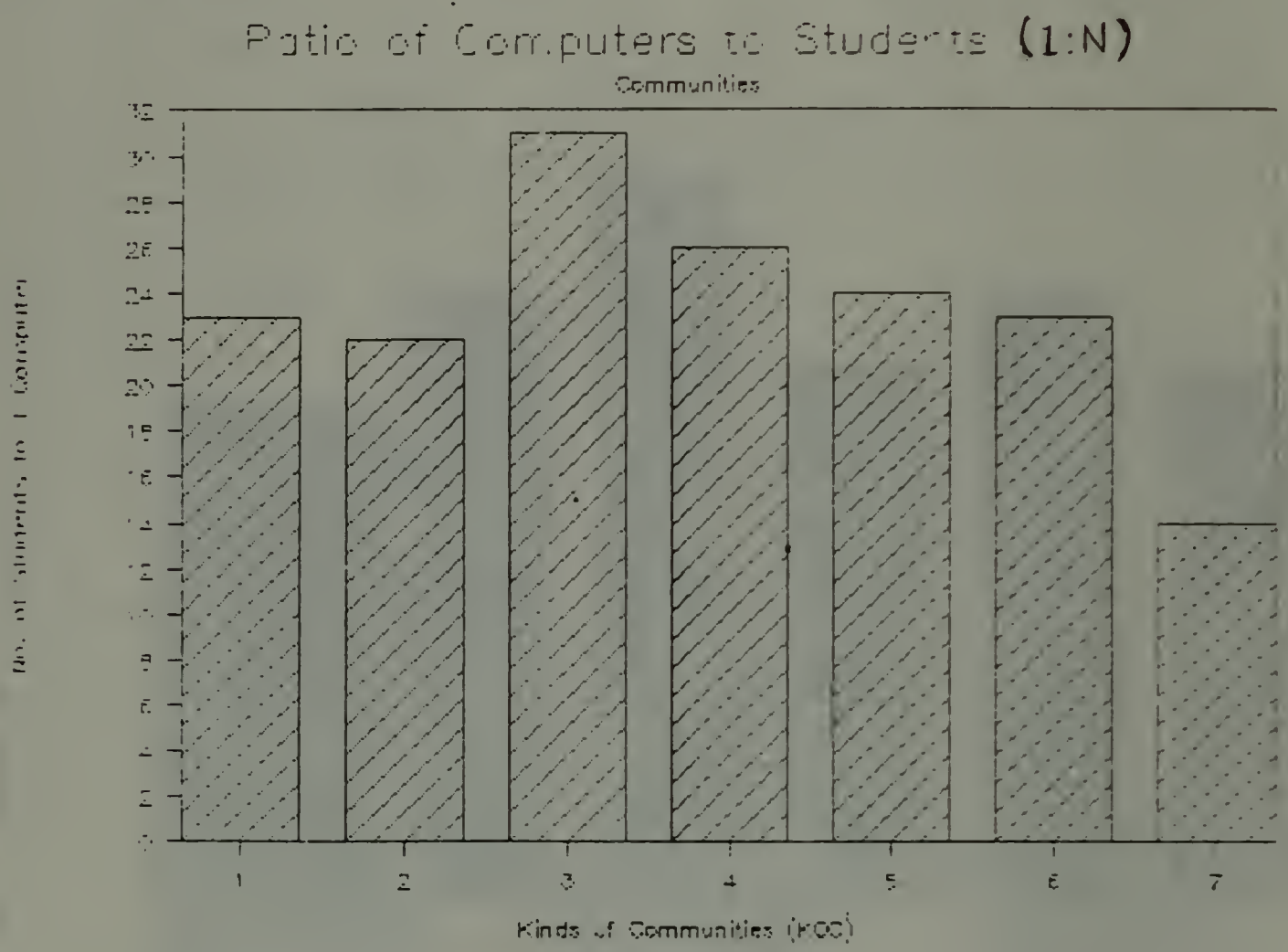
B. According to this survey, microcomputers are distributed quite evenly throughout the Commonwealth. Except for the southeast region, the ratio is approximately 1 microcomputer to 20 to 25 students. The following table indicates the ratio of microcomputers to students in each of the Department's service regions.

Region	Ratio
Greater Boston Region	1:22
Northeast Region	1:25
Central Mass. Region	1:22
Southeast Region	1:30
Greater Springfield Region	1:25
Northwest Region	1:20



C. In this survey, we found that the ratio of microcomputers to students for "resort/retirement/artistic communities" to be 1:14 but for "growth communities", it is 1:31. The following table indicates the ratio of microcomputers to students in different kinds of communities (Appendix B).

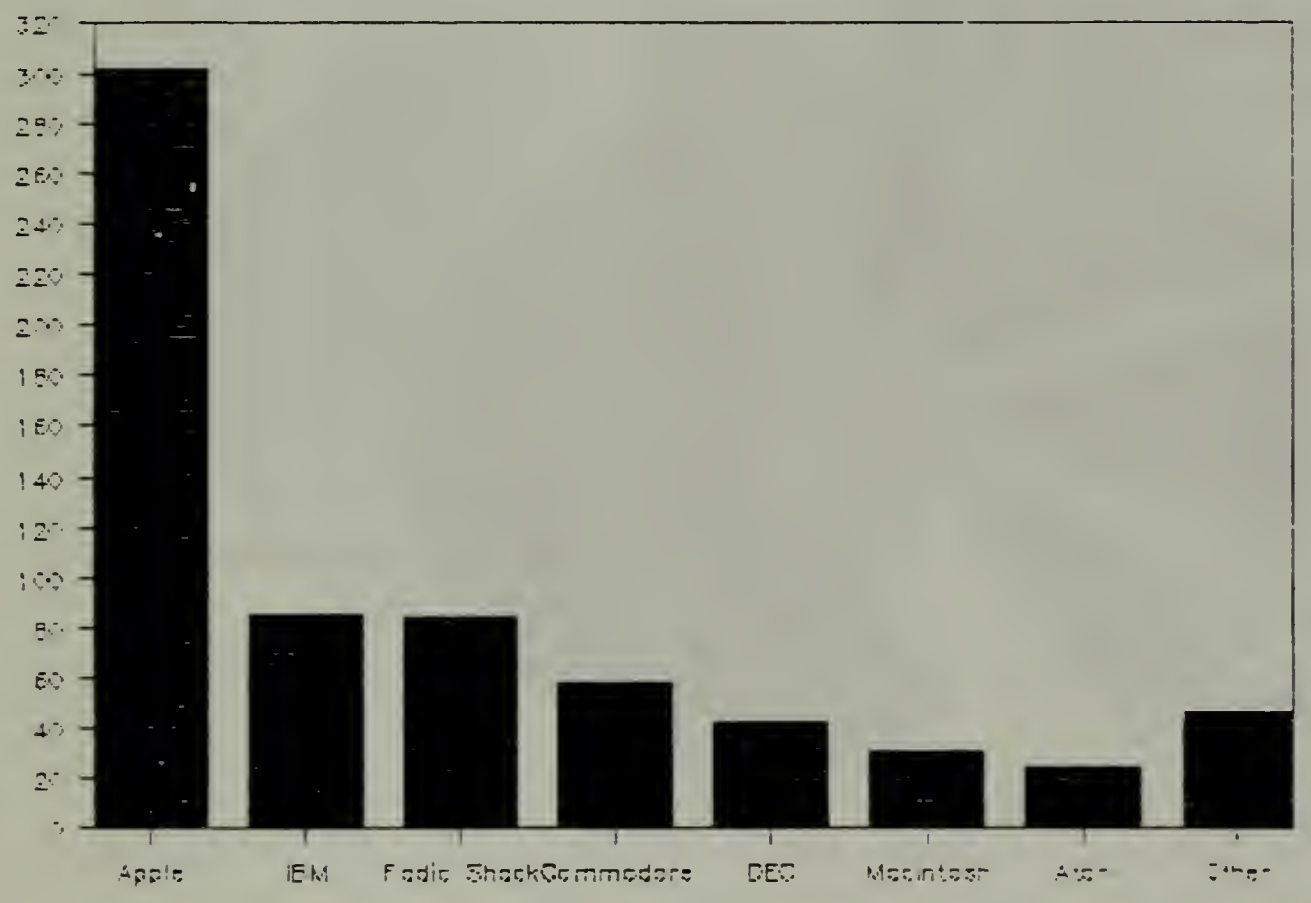
Kinds of Communities (KOC)	Ratio
1. Urbanized Centers	1:23
2. Economically-Developed Suburbs	1:22
3. Growth Communities	1:31
4. Residential Suburbs	1:26
5. Rural Economic Centers	1:24
6. Small Rural Communities	1:23
7. Resort/Retirement/Artistic	1:14



II. Brands of Computers Used

A. About 90% of reporting districts indicated that Apple computers (Apple II family) were available for instructional use in their schools. About 25% of reporting districts indicated that IBM or Radio Shack computers were in their schools. The following table indicates the brand of computers available for use in school districts.

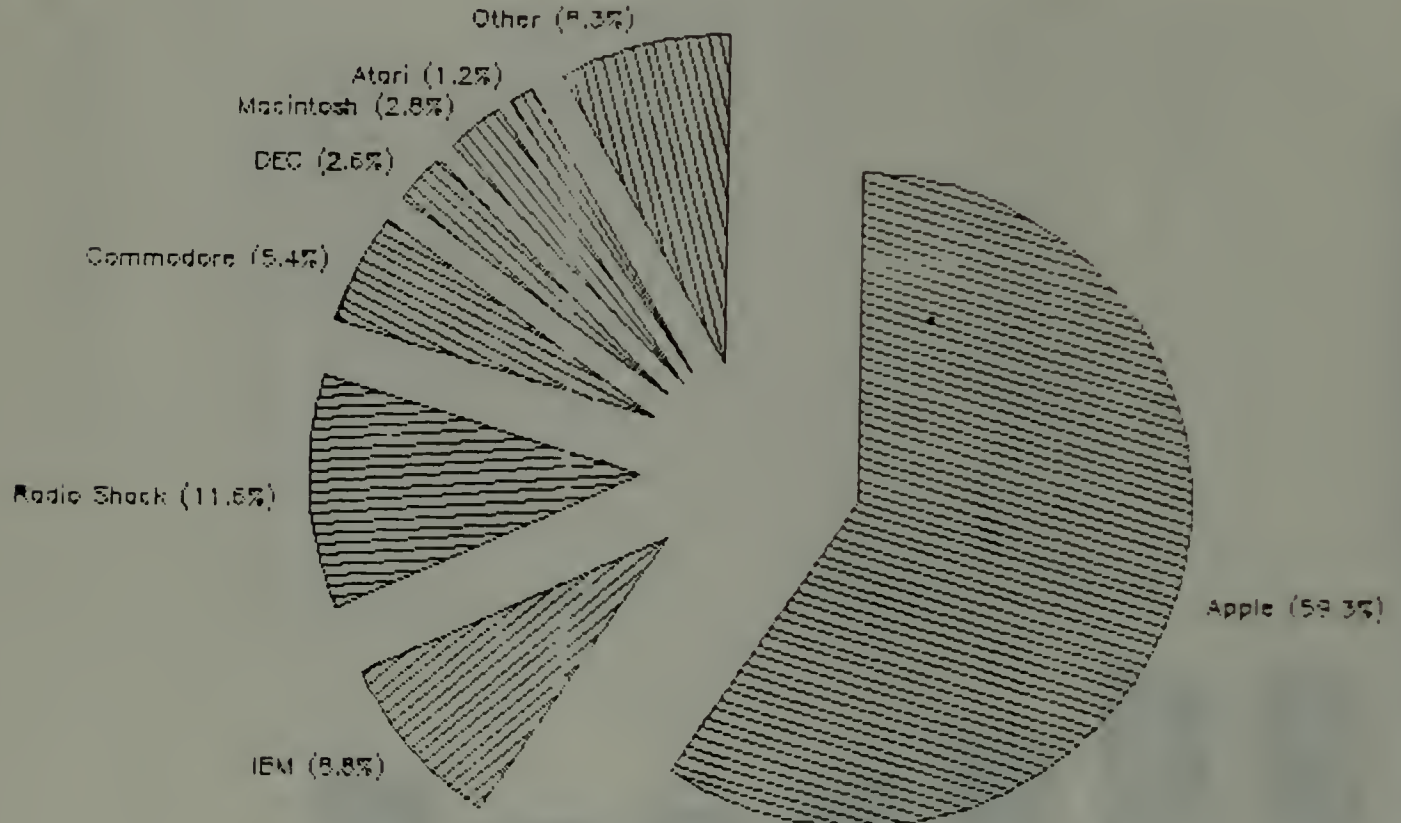
Brand	# of Districts Indicating Use (N = 337)	% of Districts Indicating Use (N = 337)
Apple	302	90%
IBM	85	25%
Radio Shack	84	25%
Commodore	58	17%
DEC	42	13%
Apple Macintosh	31	9%
Atari	25	7%
Wang	19	6%
Leading Edge	9	3%
Texas Instrument	6	2%
Acorn	5	1%
Other	7	2%



B. This survey indicates that over 50% of the computers used by schools were Apple computers (Apple II family). 12% of computers used were Radio Shack computers and 9% were IBM computers. The following table indicates the number of each brand of computers used by school districts.

Brand	# of Computers (N = 31,660)	% of Computers (N = 31,660)
Apple	18,744	59%
Radio Shack	3,672	12%
IBM	2,792	9%
Commodore	1,706	5%
Wang	1,255	4%
Apple Macintosh	877	3%
DEC	826	3%
Atari	378	1%
Acorn	246	0.8%
Leading Edge	114	0.4%
Texas Instrument	59	0.2%
Other	961	3%

Brands of Computers Used

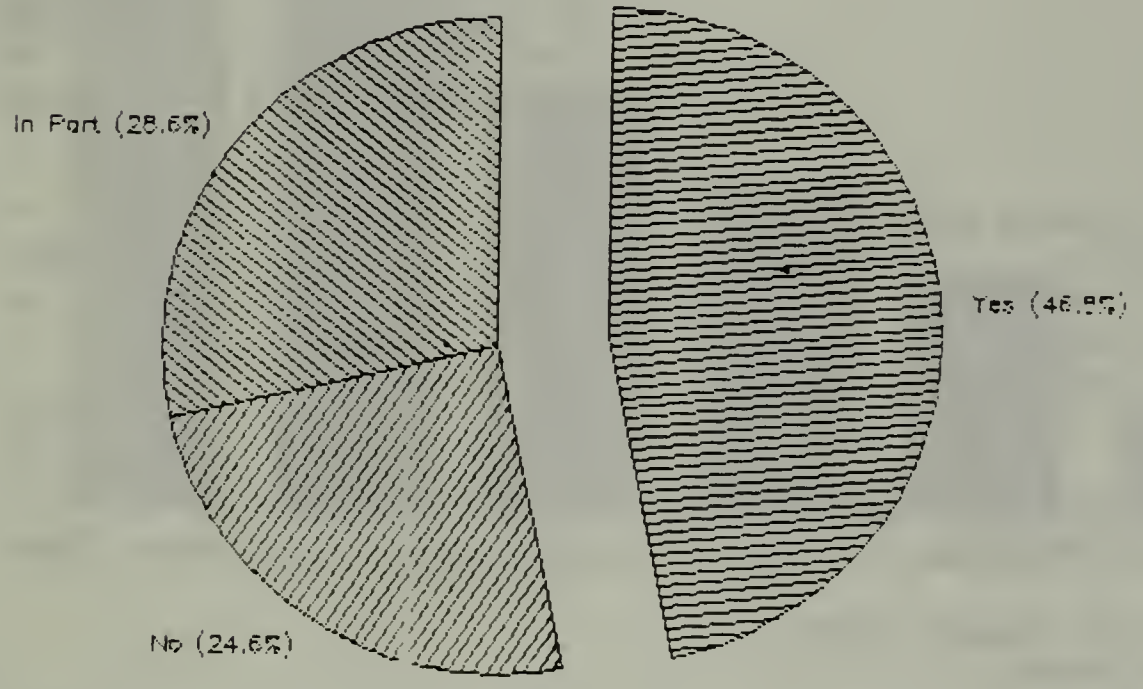


III. Multi-year plan regarding computer applications for instruction

A. More than two thirds of the responding school districts indicated that they have a written multi-year plan (or "part of a plan") regarding computer applications for instruction. Less than a third of the districts have no plan at all. The following table indicates responses of school districts to the question about whether they have a written multi-year plan regarding computer applications for instruction.

Have Computer Plan	# of School Districts (337 responses)	% of School Districts (337 responses)
Yes	154	45%
No	81	24%
In Part	94	28%

School Districts With Plan



B. In the metropolitan areas (Greater Boston and Greater Springfield regions), over 80% of the districts have a multi-year plan (or a plan in part) regarding computer applications for instruction. But in the Northwest area 45% of the school districts responded that they had a plan (or a plan in part). The following table shows the number of school districts indicating that they have a multi-year plan or have started a plan regarding computer applications for instruction, broken down by the Department's six regions.

Region	# of School Districts Having a Multi-Year Plan or Part of a Plan	% of Responses Having a Multi-Year Plan or Part of a Plan
Greater Boston	39 (Total = 44)	87%
Greater Springfield	26 (Total = 31)	83%
Southeast	62 (Total = 79)	78%
Central Mass.	62 (Total = 83)	75%
Northeast	42 (Total = 60)	70%
Northwest	17 (Total = 38)	45%

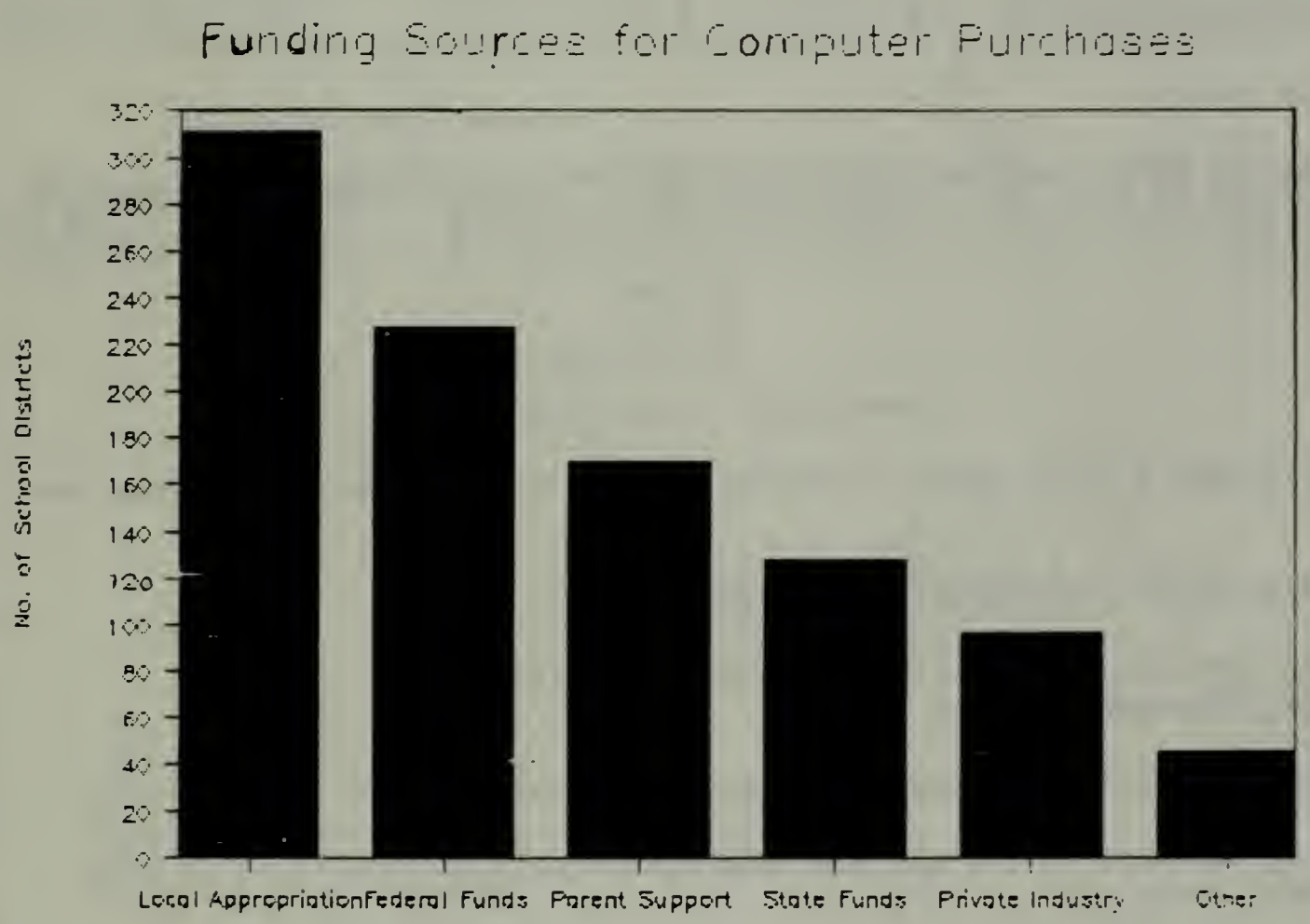
C. The following table indicates what the districts have included in their plans.

Plan Includes	# of Districts Including Item in Plan (248 with plan or plan in part)	% of Districts Including Item in Plan (248 with plan or plan in part)
Integrating appropriate software into subject area(s)	218	88%
Encouraging teachers to use applications for their professional work	205	83%
Providing incentives for teachers to receive computer training	173	70%
Requiring courses to teach word processing, data bases, spreadsheets, etc.	151	61%
Requiring courses to teach programming	144	58%

IV. Funding

The responding districts indicated that most of their funding sources for purchasing computer hardware and software came from local appropriation. Next came federal funding and parent support. The following table indicates funding sources used by school districts for purchasing computer hardware and software.

Funding Source	# of Districts Using Source (337 responses)	% of Total Responses (337 responses)
Local Appropriation	311	92%
Federal Funds	227	67%
Parent Support	170	50%
State Funds	128	38%
Private Industry	97	29%
Other	45	13%



System Code _____

APPENDIX A

TABLE-8 COMPUTER CAPACITY/ADMINISTRATIVE AND INSTRUCTIONAL USAGE (Page Three)

9. How many computers are available for instructional use across all the schools in your district?

		Number	Type(s)
micro/PC's	a.	_____	_____
	b.	_____	_____
	c.	_____	_____
	d.	_____	_____
mini's	e.	_____	_____
	f.	_____	_____
terminals (mainframe)	g.	_____	_____
terminals (Mini)	h.	_____	_____

10. Does the district have a written multi-year plan regarding computer applications for instruction?

a. yes ___
b. no
c. in part ___
(explain) _____

11. If the district has a plan, does it include the following: (Check all which are included.)

a. one or more required courses to teach programming _____

b. one or more required courses to teach word processing, data bases, spreadsheets, etc. _____

c. integrating appropriate software into subject area(s) _____

d. encouraging teachers to use applications for their professional work _____

e. providing incentives for teachers to receive computer training _____

12. What sources of funding has the district used for purchasing computer hardware and software?

a. Local Approp. ___
b. Private Industry ___
c. PTA's etc. ___

State: (indicate state program)
d. _____
e. _____
f. _____

Federal: (indicate federal program)
g. _____
h. _____

Other: (indicate source)
i. _____
j. _____

Urbanized Centers
(1)

ATTLEBORO	HAVERHILL	PROVINCETOWN	--REGIONALS--
BEVERLY	HOLYOKE	QUINCY	LAWRENCE VOCATIONAL
BOSTON	LAWRENCE	REVERE	NORTHAMPTON SMITH
BROCKTON	LEOMINSTER	SALEM	WORCESTER TRADE
CAMBRIDGE	LOWELL	SOMERVILLE	BERKSHIRE HILLS
CHELSEA	LYNN	SOUTHBRIDGE	BRISTOL PLYMOUTH
CHICOPEE	MALDEN	SPRINGFIELD	GREATER FALL RIVER
CLINTON	MARLBORO	TAUNTON	GREATER LAWRENCE
EVERETT	MEDFORD	WALTHAM	GREATER NEW BEDFORD
FITCHBURG	METHUEN	WATERTOWN	GREATER LOWELL
FRAMINGHAM	MILFORD	WEBSTER	MONTACHUSETT
FALL RIVER	NEW BEDFORD	WESTFIELD	NORTHERN BERKSHIRE
GARDNER	NORTH ADAMS	WEST SPRINGFIELD	SOUTHEASTERN
GLOUCESTER	NORTHAMPTON	WORCESTER	SOUTHERN WORCESTER
GREAT BARRINGTON	PITTSFIELD		WHITTIER
GREENFIELD			BRISTOL COUNTY

Economically-Developed Suburbs
(2)

• ACTON	• DANVERS	• NATICK	• TEWKSBURY	--REGIONALS--
• ANDOVER	• DEDHAM	• NEEDHAM	• WAKEFIELD	ACTON BOXBOROUGH
• ARLINGTON	• EAST LONGMEADOW	• NEWTON	WALPOLE	CONCORD CARLISLE
• ASHLAND	• FOXBOROUGH	• NORTH ANDOVER	WELLESLEY	NORTHBORO SOUTHBORO
• AUBURN	• FRAMINGHAM	• NORTHBOROUGH	WESTBOROUGH	ASSABET VALLEY
• AVON	• FRANKLIN	• NORWOOD	WEST BOYLSTON	BLUE HILLS
• BEDFORD	• GARTON	• PEABODY	WESTWOOD	QUINOBIN
• BELMONT	• HOLBROOK	• RANDOLPH	WEYMOUTH	SOUTH MIDDLESEX
• BEVERLY	• HUDSON	• READING	WILMINGTON	MINUTEMAN
• BILLERICA	• LEXINGTON	• SAUGUS	WINCHESTER	NASHOBA VALLEY
• BRAINTREE	• LITTLETON	• SHREWSBURY	WOBURN	NORTHEAST METRO
• BROOKLINE	• MARBLEHEAD	• SOMERSET		NORTH SHORE
• BURLINGTON	• MARLBOROUGH	• SOUTH HADLEY		SHAWSHEEN VALLEY
• CANTON	• MELROSE	• STONEHAM		TRI COUNTY
• CHELMSFORD	• MIDDLETON	• STOUGHTON		ESSEX COUNTY
• CONCORD	• MILTON	• SWAMPSCOTT		NORFOLK COUNTY

Growth Communities
(3)

• AGAWAM	• NORWICH	• ROCHESTER	• --REGIONALS--
• AMHERST	• PINGSTON	• ROWLEY	• AMHERST PELHAM
• BARNSTABLE	• LANCASTER	• SALISBURY	• ASHBURNHAM WESTMINSTER
• BELCHERTOWN	• LENOX	• SEEKONK	• BRIDGEWATER RAYNHAM
• BELLINGHAM	• LUDLOW	• SOUTHWICK	DENNIS YARMOUTH
• BOURNE	• LUNENBURG	• STURBRIDGE	FREETOWN LAKEVILLE
• BRIDGEWATER	• MANSFIELD	• SUNDERLAND	NEW SALEM WENDELL
• CARVER	• MARION	• SWANSEA	OLD ROCHESTER
• DARTMOUTH	• MASHPEE	• TYNGSBOROUGH	PLYMOUTH CARVER
• DUXBURY	• MATTAPOISETT	• WAREHAM	SILVER LAKE
• EAST BRIDGEWATER	• NORTON	• WENDELL	TANTASQUA
• FALMOUTH	• PEMBROKE	• WESTMINSTER	TRITON
• FREETOWN	• PLAINVILLE	• WESTPORT	CAPE COD
• GRANBY	• PLYMOUTH	• YARMOUTH	OLD COLONY
• HANSON	• PLYMPTON		UPPER CAPE COD
• HARVARD	• RAYNHAM		

Residential Suburbs
(4)

• BERLIN	• HAMILTON	• MEDWAY	• SHARON	--REGIONALS--
• BOLTON	• HAMPDEN	• MENDON	• SHERBORN	BERLIN BOYLSTON
• BOXBOROUGH	• HANOVER	• MILLIS	• SOUTHBOROUGH	DOVER SHERBORN
• BOXFORD	• HINGHAM	• MONTGOMERY	• STERLING	GROTON DUNSTABLE
• BOYLSTON	• HOLDEN	• NORFOLK	• STOW	HAMILTON WENHAM
• CARLISLE	• HOLLISTON	• NORTH READING	• SUDBURY	HAMPDEN WILBRAHAM
• CONCORD	• HOPKINTON	• NORWELL	• TOPSFIELD	KING PHILIP
• DOVER	• LINCOLN	• PAXTON	• WAYLAND	LINCOLN SUDBURY
• DUNSTABLE	• LONGMEADOW	• PELHAM	• WENHAM	NASHOBA
• DUXBURY	• LYNNFIELD	• PRINCETON	• WESTFORD	NORDON UPTON
• EASTON	• MANCHESTER	• RICHMOND	WESTHAMPTON	NASHOBA
• GEORGETOWN	• MARSHFIELD	• SANDWICH	WESTON	PENTUCKET
• GROTON	• MEDFIELD	• SCITUATE	WILBRAHAM	WACHUSETT
• GROVELAND				

Rural Economic Centers
(5)

• ABINGTON	• DUDLEY	• MONSON	TEMPLETON	CENTRAL BERKSHIRE
• ACUSHNET	• EAST BROOKFIELD	• MONTAGUE	UXBRIDGE	DUDLEY CHARLTON
• ADAMS	• EASTHAMPTON	• NEW BRAINTREE	WARE	FRONTIER
• AMESBURY	• ERVING	• NEWBURYPORT	WARREN	GILL MONTAGUE
• ATHOL	• GILL	• NORTH ATTLEBOROUGH	WEST BRIDGEWATER	HOOSAC TRAIL
• BARRE	• HARDWICK	• NORTHBRIDGE	WEST BROOKFIELD	NIPMUCSETT
• BERNARDSTON	• HATFIELD	• NORTH BROOKFIELD	WHITMAN	PIONEER
• BLACKSTONE	• HINSDALE	• NORTHFIELD	WILLIAMSBURG	QUABBIN
• BROOKFIELD	• HOPEDALE	• ORANGE	WINCHENDON	RALPH C MAHAR
• BUCKLAND	• HULL	• OXFORD	WINTHROP	SPENCER-E BRAIFLD
• CHESHIRE	• LEE	• PALMER	WRENTHAM	WARREN-W BRAIFLD
• CHESTER	• LEICESTER	• ROCKLAND	--REGIONALS--	WHITMAN HANSON
• CLARKSBURG	• MERRIMAC	• RUSSELL	ADAMS CHESHIRE	BLACKSTONE VALLEY
• COLRAIN	• MIDDLEBOROUGH	• SHELBURNE	ATHOL ROYALSTON	FRANKLIN COUNTY
• DALTON	• MILLBURY	• SHIRLEY	BLACKSTONE-MILVLE	PATHFINDER
• DEERFIELD	• MILLVILLE	• SPENCER	BUCKLAND SHELBURNE	SOUTH SHORE
• DIGHTON	• MONROE			

Small Rural Communities
(6)

• ASHBURNHAM	• GOSHEN	• MIDDLEFIELD	• REHOBOTH	• WEST NEWBURY
• ASHBY	• GRANVILLE	• MT WASHINGTON	• ROYALSTON	• WORTHINGTON
• BECKET	• HALIFAX	• NEWBURY	• RUTLAND	• --REGIONALS--
• BERKLEY	• HANCOCK	• NEW SALEM	• SAVOY	• DIGHTON ROBTN
• BLANDFORD	• HEATH	• OAKHAM	• SOUTHAMPTON	• GATEWAY
• BRIMFIELD	• HOLLAND	• OTIS	• SUTTON	• HAMPSHIRE
• CHARLEMONT	• HUBBARDSTON	• PEPPERELL	• TOLLAND	• HAVILAND
• CHARLTON	• HUNTINGTON	• PERU	• TOWNSEND	• NORTH MIDDLESEX
• CHESTERFIELD	• LAKEVILLE	• PETERSHAM	• WALES	
• DOUGLAS	• LANESBOROUGH	• PHILLIPSTON	• WARWICK	
• FLORIDA	• LEYDEN	• PLAINFIELD	• WASHINGTON	

Resort/Retirement/Artistic
(7)

• ALFORD	• EGREMONT	• NANTUCKET	• STOCKBRIDGE	• VINEYARD
• ASHFIELD	• ESSEX	• NEW ASHFORD	• TISBURY	• --REGIONALS--
• BREWSTER	• GAY HEAD	• NEW MARLBOROUGH	• TRURO	• NAUSET
• CHATHAM	• GOSNOLD	• OAK BLUFFS	• TYRINGHAM	• ARTHUR VINEYARD
• CHILMARK	• HADLEY	• ORLEANS	• UPTON	• MOUNT GRETYLOK
• CONWAY	• HAVLEY	• ROCKPORT	• WELLFLEET	• SOUTHERN BERKSH
• CUMMINGTON	• IPSWICH	• ROWE	• WEST STOCKBRIDGE	
• DENNIS	• LEVERETT	• SANDISFIELD	• WEST TISBURY	
• EASTHAM	• MONTEREY	• SHEFFIELD	• WHATELY	
• EDGARTOWN	• NANTANT	• SHUTESBURY	• WILLIAMSTOWN	

APPENDIX B